

MISSOURI. Conservationist

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The Missouri Model of Wetland Conservation

Private citizens, the Missouri Department of Conservation, federal refuges, and Ducks Unlimited joined together to create one of the best waterfowl management programs in the nation. The Missouri Model

of wetland management continues to evolve and grow as wetlands and their dynamic functions become increasingly important to society.

A new book, *Waterfowl Hunting and Wetland Conservation in Missouri*, highlights this model of collaboration that has created today's system of wetlands throughout Missouri. Just like a new dawn on a marsh, this book shares the past, present, and hopeful future of wetland conservation. Learn about Missouri's unique wetland history and directly support wetland conservation in the state for future generations. All net proceeds will go directly into conserving Missouri's wetlands for the future.

Today's duck hunters, bird watchers, and wetland enthusiasts owe a debt of gratitude to the men and women who helped create this wetland system. What's the best way to pay it forward? By supporting wetland conservation with your time, money, and resources, and by helping wetlands continue to grow and remain relevant in tomorrow's world.

Missouri lost 90 percent of its historic wetlands through the years. Reestablishing, reconnecting, and managing some of those wetland systems will ensure that annual wetland bird migrations are a part of our children's future. This unique relationship of birds, habitat, and people continues to excite Missourians every spring and fall.

Early visionaries included Ted Shanks, Mike Milonski, and Dick Vaught. These three men, along with others, planned and guided wetland conservation in Missouri. Ted Shanks' simple vision for Missouri's waterfowl and wetland management evolved into five principles:

- Acquisition, development, and management of a system of state-owned wetland conservation areas
- A strong partnership with the US Fish and Wildlife Service
- Recognition that private landowners provide important waterfowl habitat and ultimately these lands determine the fate of waterfowl in Missouri
- A foundation for collaboration among government agencies and nongovernment organizations (in this case most notable Ducks Unlimited)
- Commitment to science-based management delivered through strong partnerships between researchers and managers

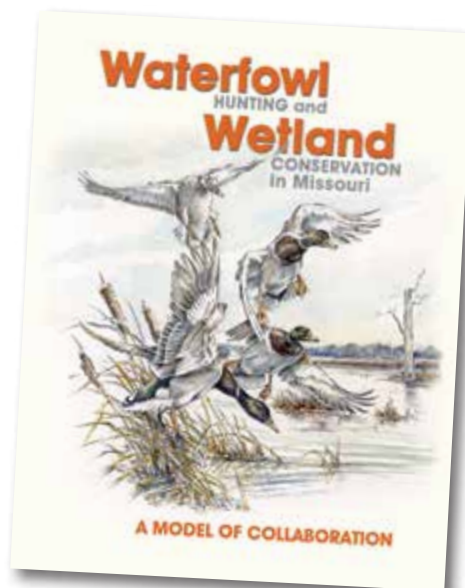
These visionary principles are just as important today. Wetland conservation and management of wetland species is a national and international cooperative management effort.

As this book indicates, Missouri's goals have been to preserve the state's wetlands, restore functionality to historical waterfowl areas, and ensure that citizens have ample opportunities to use those areas. Not only is the Missouri Model of wetland management alive and well, it is thriving and continues to evolve and grow in stature. Missouri's wetland jewels draw millions of migratory waterfowl and wetland birds each spring and fall. This annual Grand Passage of wetland birds relies on that critical habitat as part of the annual journey.

Whether it's the cupped wings of a mallard, a little green heron in flight, sora rails walking across a marsh, or the return of the majestic trumpeter swan, the Missouri Model of wetland conservation ensures that healthy, functioning wetlands continue to benefit future generations of Missouri. Just as Missouri citizens guided this process, Missouri citizens will determine the future of wetland conservation in our state.

Tim Ripperger, deputy director

For more information, visit mochf.org/2014/04/book-waterfowl-hunting-and-wetlands-conservation-in-missouri. You can order copies at mdcnatureshop.com.



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by Bill White

Success for all birds through Missouri's quail restoration efforts

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Learn to fish habitat structures for great results.

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by Frank Nelson

One of the Department's oldest wetland management areas is being updated for improved function, better habitat, and public accessibility.

Cover: A redhead duck swims in a pool of water. Photograph by Noppadol Paothong.

📷 600mm lens + 2.0x teleconverter
f/11 • 1/250 sec • ISO 400

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WHAT IS IT?

Our photographers have been busy exploring the intricacies of the Missouri outdoors. See if you can guess this month's natural wonder. The answer is revealed on Page 8.



PHOTOGRAPH BY NOPPADOL PAOTHONG

HEY! THAT'S NO BIRD...

Your August article on the white-lined sphynx (Plants & Animals; Page 30) was very timely. We were sitting on our deck this evening, watching a trio of hummingbirds chase each other around our hummingbird feeder and hanging baskets, when I noticed what I thought was a fourth flitting among the purple phlox nearer the ground. I got up and watched it and recognized it immediately from your article as a white-lined sphynx. It hovered nearby for several minutes.

I wish I had the photographic skills of your staff, as the sphynx was much prettier and more interesting than the hummingbirds, with its dual pairs of varied colored wings and striped thorax. I hope it returns.

James T. Biehle, Ballwin

I always enjoy your articles and study your photos in the *Conservationist*. I hike and enjoy nature photography and often visit conservation

areas around Fenton. I especially enjoyed the article on the white-lined sphynx moth. Last September, I had a similar experience at Young Conservation Area. I have been visiting this area for over 25 years. After a morning of hiking, I was headed back to my car. Amongst the tall thistles I spotted what I first thought was a hummingbird. This moth stayed around only long enough for me to get a half dozen photos. It was exciting to see this little creature for the first time.

Mike Conley, via Internet

DUCK, DUCK, FISH

Line Up for a Good Time (August; Page 10) reminded me of the time my buddies, Joe and Larry, and I used duck decoys as jug lines when fishing for catfish. It was really exciting to paddle a 10-foot john boat going after a mallard decoy with a 6-pound channel cat pulling the jug through the water.

Although I have not lived in Missouri since 1978, I still enjoy reading the *Missouri Conservationist* magazine. Keep up the great articles.

Dan Stockwell, Zanesville, Ohio

GOODBYE, OLD FRIENDS

My father taught me about hunting, fishing, and a respect for conservation. One way he did that was by supporting the Missouri Department of Conservation and getting the *Conservationist*. In 2006, he was diagnosed with Alzheimer's. As the disease progressed, I began to bring him my copies of the magazine. Hard to know for sure, but I believe the familiar and bright, colorful pictures brought him some semblance of comfort and fond memories of his time in the lakes, woods, and fields of our beautiful state before he passed in 2010. Thanks.

Chris Baker, via Facebook

Thank you for the *Little Blue Heron* article (September; Page 30). My parents have a lake on their property where blue herons nest every year. It was interesting to find that the little ones were white prior to growing into their beautiful blue plumage. They are fascinating to watch, and they interact so well with the small flocks of geese and ducks. Beautiful birds!

My husband was an avid reader, hunter, fisherman, and conservationist until his passing in June. Thanks for the beautiful memories of him reading and discussing Missouri conservation with my son and grandsons.

Cynd Tichacek, Farmington

TEACHER'S PET

I want you to know how much I appreciate your conservation magazine. I use it in my classroom with my 7-8th grade English classes. Today we did an assignment I called "Skimming for Details." I gave them 39 questions and they had to read the articles to find the answers. It's great practice for the yearly MAP test as far as reading nonfiction for details!

Jerrienne Wallace, Festus

CORRECTION

The June *Did You Know* column stated that 2 million pounds of litter were removed from waterways. It should have read 20 million pounds.



Reader Photo

FROG-EAT-FROG WORLD

Richard Mueller snapped this photo of a young bullfrog eating what might be a Blanchard's cricket frog. Bullfrogs will eat anything they can fit in their mouth, including other frogs, and even other bullfrogs. Mueller took this photo as he was walking around one of his ponds looking for things to photograph. "When I first saw this frog, I couldn't tell exactly what I was seeing," said Mueller. "It looked like it had feathers or antennae coming out of its head. It was after I got closer that I could see it was the feet of another frog." Mueller said that since he retired from his job a couple of years ago, he now gets to spend plenty of time outdoors, walking, bird watching, and taking photos like this one.



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MDC Online

Discover more about nature and the outdoors through these sites.

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Kids' site: XplorMo.org

Missouri Conservationist: mdc.mo.gov/node/83

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KIDS' MAGAZINE

Six times a year we'll bring you eye-popping art, photos, and stories about Missouri's coolest critters, niftiest natural places, liveliest outdoor activities, and people who've made a living in the wild. Come outside with us and XPLOR!

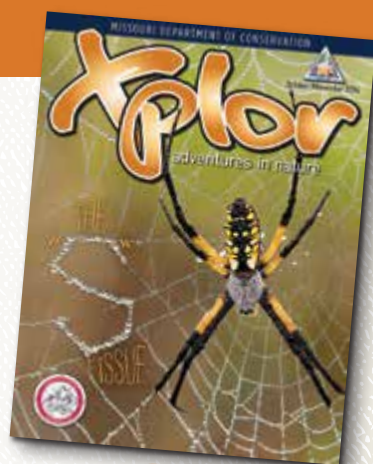
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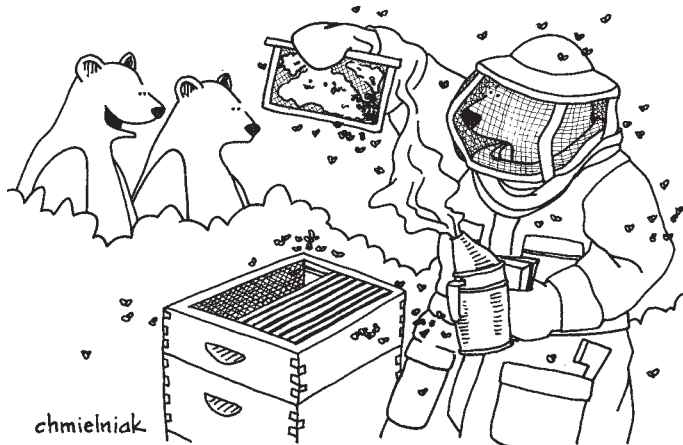
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"Now there's a bear who's serious about honey."

Agent Notes

Be Bear Aware This Fall

MANY FOLKS MAY not think about encountering a bear on their fall outings, but black bears are becoming more abundant in Missouri.

The Department of Conservation began a black bear study in 2010 to better understand these native Missouri mammals. To date, 88 bears have been trapped, tagged, collared, and measured. We have learned that there are approximately 300 bears in Missouri, and they usually head into their dens between mid-November to mid-December.

We encourage people to be bear aware. Some people reporting bears are excited to get a glimpse of one, while others seem nervous. Black bears are typically docile and rarely show signs of aggression. They can usually be scared away easily.

Bears are adaptable and intelligent. They may begin to associate human homes or camps with food. People living or camping near the woods are encouraged to keep food in sealed containers. Common bear attractants left out by humans are bird feeders, pet food, and garbage. Most nuisance bear problems can be resolved by eliminating these sources of food.

Black bears are protected in Missouri. We encourage everyone to help with bear management by reporting bear sightings. This helps determine areas with more bear activity. To learn more about bears or to report sightings, visit our bear page at mdc.mo.gov/node/973.

Mark Henry is the conservation agent for Douglas County. If you would like to contact the agent for your county, phone your regional conservation office listed on Page 3.



HUNTING AND FISHING CALENDAR

FISHING	OPEN	CLOSE
Black Bass from Ozark Streams	05/24/14	02/28/15
Bullfrogs and Green Frogs	Sunset	Midnight
	06/30/14	10/31/14
Nongame Fish Giggling	09/15/14	01/31/15
Paddlefish on the Mississippi River	09/15/14	12/15/14
Trout Parks	03/01/14	10/31/14
HUNTING	OPEN	CLOSE
Coyote	05/12/14	03/31/15
Crow	11/01/14	03/03/15
Deer		
Archery	09/15/14	11/14/14
	11/26/14	01/15/15
Firearms		
Urban Portion	10/10/14	10/13/14
Early Youth Portion	11/01/14	11/02/14
November Portion	11/15/14	11/25/14
Antlerless Portion (open areas only)	11/26/14	12/07/14
Alternative Methods Portion	12/20/14	12/30/14
Late Youth Portion	01/03/15	01/04/15
Doves	09/01/14	11/09/14
Groundhog (woodchuck)	05/12/14	12/15/14
Pheasant		
Youth	10/25/14	10/26/14
North Zone	11/01/14	01/15/15
Southeast Zone	12/01/14	12/12/14
Quail		
Youth	10/25/14	10/26/14
Regular	11/01/14	01/15/15
Rabbit	10/01/14	02/15/15
Sora and Virginia rails	09/01/14	11/09/14
Squirrel	05/24/14	02/15/15
Turkey		
Archery	09/15/14	11/14/14
	11/26/14	01/15/15
Firearms	10/01/14	10/31/14
Waterfowl	see the <i>Waterfowl Hunting Digest</i> or mdc.mo.gov/node/3830	
Wilson's (common) snipe	09/01/14	12/16/14
Woodcock	10/15/14	11/28/14
TRAPPING	OPEN	CLOSE
Beaver and Nutria	11/15/14	03/31/15
Furbearers	11/15/14	01/31/15
Otters and Muskrats	11/15/14	02/20/15

For complete information about seasons, limits, methods, and restrictions, consult the *Wildlife Code* and the current summaries of *Missouri Hunting and Trapping Regulations* and *Missouri Fishing Regulations*, *The Spring Turkey Hunting Regulations and Information*, *the Fall Deer and Turkey Hunting Regulations and Information*, *the Waterfowl Hunting Digest*, and *the Migratory Bird Hunting Digest*. For more information visit mdc.mo.gov/node/130 or permit vendors.

ASK
THE

Ombudsman



Eastern cottontail

Q. Are wild rabbits safe to eat at the start of the rabbit season? My grandpa would not allow us grandchildren to hunt rabbits until a hard frost had occurred. He told us they had “wolves” and were not safe to eat until after a hard frost.

The term “wolves” is used for cutaneous warbles, which are the larvae of a certain group of flies in the genus *Cuterebra*, called botflies. The flies lay their eggs on rabbits, squirrels, and other mammals and, upon hatching, the larvae burrow into the skin. The larvae are most abundant in late summer and fall, so early season rabbit hunters may encounter rabbits with warbles. It is usually not a serious health concern for the rabbits, and the warbles do not impair the edibility of the meat. The lesions caused by the larvae are usually restricted to the skin and connective tissue. The lesions may look bad, and some hunters will discard such a rabbit, but it is usually not necessary to do so. The prevalence of warbles will decrease as cold weather arrives because the adult

flies will not be around to lay eggs. The greater threat from rabbits is the bacterial disease tularemia. Regardless of the season, we recommend that hunters wear gloves while dressing rabbits, cook the meat thoroughly, and be aware of symptoms of tularemia (cdc.gov/tularemia).

Q. I’ve noticed a lot of leafy twigs on the ground under my pecan tree recently. They seem to have been cleanly cut part of the way to the center of the twig and then broken off. Can you tell me what is causing the damage?

Leafy twigs on the ground under trees can result from several causes, but what you described sounds like the work of a beetle (*Oncideres cingulata*) called a

twig girdler. A female beetle will chew a groove all the way around a small twig but not all of the way to the center. Then she lays several eggs in the twig beyond the groove. The twig, with the eggs inside, falls to the ground when the wind breaks the remaining center of the cut section, or it falls under its own weight after drying. The eggs hatch into larvae that will live and feed in the broken twig, spend the winter there, and continue to develop until the following summer when the adult beetles emerge to start the cycle again. The damage to trees is usually minimal. You can reduce future populations of the beetle by destroying the fallen twigs.

Q. Why do leaves change color in the fall?

Tree leaves have cells that create food for the tree. Those cells use chlorophyll, which gives leaves their green color. Through photosynthesis, chlorophyll absorbs energy from the sun to turn water and carbon dioxide into sugars and starches — food for the tree. There also are hidden yellow and orange colors in the leaves, called carotenoids. When shorter fall days and cooler fall nights cause chlorophyll to break down, the carotenoids start showing. Red and purple colors are newly created in the fall when sugars are made during warm days, then trapped in leaves during cool nights. The trapped sugars change chemically into red and purple anthocyanins. Learn more at mdc.mo.gov/node/4566.

Ombudsman Tim Smith will respond to your questions, suggestions, or complaints concerning the Conservation Department or conservation topics.
Address: PO Box 180, Jefferson City, 65102-0180. Phone: 573-522-4115, ext. 3848.
Email: Ombudsman@mdc.mo.gov



Mallard

Waterfowl Hunting Outlook Outstanding

With duck numbers at historic levels for the third year in a row, the 2014–15 waterfowl hunting outlook is excellent. The wild card, as always, is weather.

The North American population of mallards, the mainstay species for Missouri waterfowl hunters, is estimated at 10.9 million this year. That is up 5 percent from 2013 and 42 percent above the long-term average (LTA). Mallard numbers have exceeded this year's figure only once in

the past 56 years — in 1958.

Duck species breeding populations recorded in the 2014 survey include:

Gadwall, 3.8 million, 14 percent more than last year and 102 percent above LTA.

Blue-winged teal, 8.5 million, which is similar to 2013 and up 75 percent from LTA.

Green-winged teal, 3.4 million, up 13 percent from 2013 and 69 percent above LTA.

Scaup, 4.6 million, up 11 percent from 2013 and 8 percent below LTA.

Shoveler, 5.3 million, 11 percent more than 2013 and 114 percent above LTA.

Redhead, 1.3 million, up 6 percent from 2013 and 85 percent above LTA.

Most of the Conservation Department's managed wetland areas are in good condition. All that is needed now for an excellent hunting season is timely cold fronts to push migrating birds into Missouri but not cold enough to freeze wetland areas, sending ducks farther south. Like farmers, waterfowl hunters are at the mercy of the weather. Only optimists plant corn or hunt ducks.

Duck Stamps Available Online

Federal Duck stamps will be widely available this year. Both Federal Duck Stamp availability and convenience to hunters were enhanced this year with the addition of an electronic Duck Stamp purchase option. All Missouri permit vendors will offer electronic Duck Stamps, and the traditional purchase venues of the post offices, Department of Conservation offices, and Nature Centers will continue to carry the paper duck stamp.

Permits and duck stamps will no longer be sold at waterfowl conservation areas, except for Columbia Bottom Conservation Area. Since not all post offices or Conservation Department offices have the stamps, it's a good idea to buy well in advance of hunting or call ahead about availability.

Duck stamps will be sold online for the first time this year, giving hunters and retail vendors an alternative to buying/selling paper duck stamps. Hunters can buy the stamps at mo.wildlifelicense.com. Retail vendors will be able to process the transaction for hunters using the same website. An electronic stamp, or e-Stamp, will be issued at the time of purchase, and a paper duck stamp will be sent through the mail.

Hunters can use their e-Stamps immediately and for 45 days following purchase. After 45 days, they must carry the paper duck stamp.

E-Stamps may be purchased from permit vendors for \$17.50, which includes a \$2.50 handling fee (part of the federal vendor process). E-Stamps can also be purchased from the convenience of your home computer or mobile device for an additional \$1 Internet service fee on your total online order.

The US Fish and Wildlife Service selected Missouri, along with Louisiana, Michigan, North Carolina, and Virginia, to provide duck stamps through its new federal e-Stamp option.

Hunters and waterfowl enthusiasts can now buy Federal Duck Stamps from all Missouri permit vendors electronically or continue to purchase the paper duck stamp at post offices or Department of Conservation offices, making them widely available and more convenient for all wetland enthusiasts.

Waterfowl Seasons Set

The Conservation Commission approved the following 2014–15 waterfowl hunting regulations at its August meeting.

Youth Hunting Days:

North Zone: Oct. 18–19

Middle Zone: Oct. 25–26

South Zone: Nov. 22–23

Regular Duck Season:

North Zone: Oct. 25– Dec. 23

Middle Zone: Nov. 1–Dec. 30

South Zone: Nov. 27– Jan. 25

Shooting Hours: One-half hour before sunrise to sunset.

Bag Limit: Six ducks daily with species restrictions of:

- 4 mallards (no more than 2 females)
- 3 scaup
- 3 wood ducks
- 2 redheads
- 2 hooded mergansers
- 2 pintails
- 1 canvasback (decreased from 2 last year)
- 1 black duck
- 1 mottled duck

Possession Limit: Three times the daily bag (in total 18; varies by species).

Goose Season:

Snow, blue, and Ross's geese: Statewide, Oct. 25–Jan. 31 (99 days)

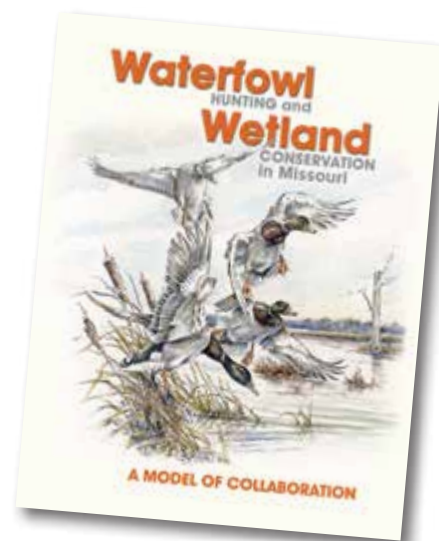
White-fronted geese: Statewide, Nov. 27–Jan. 31 (66 days)

Canada geese and brant: Statewide, Oct. 4–Oct. 12 (9 days) and Nov. 27–Jan. 31 (66 days)

Further details of waterfowl hunting regulations are available in the 2014–2015 *Waterfowl Hunting Digest*, which will be available from hunting permit vendors and at mdc.mo.gov/node/303.

Book Partners Underwrite Wetland Conservation

Thanks to a unique partnership, Missourians can own a piece of duck hunting and wetland conservation history while playing an important part. Bass Pro Shops, Ducks Unlimited, the Conservation Federation of Missouri, the Missouri Conservation Heritage Foundation, and private citizens have joined the Conservation Department in producing *Waterfowl Hunting and Wetland Conservation in Missouri — A Model of Collaboration*. The authors, many of them former waterfowl biologists and wetland managers, donated their services to produce this new book. Besides contributing material for the book, the partners paid the production costs. The book traces Missouri's trend-setting work conserving and restoring wetland habitat. It also takes an intimate look at the Show-Me State's waterfowl-hunting culture, which continues to thrive thanks to wetland conservation. *Waterfowl Hunting and Wetland Conservation in Missouri* is richly illustrated with art and photographs, some never published before. It is a must-have book for serious migratory bird hunters, capturing the romance and thrill of duck hunting and the 80-year struggle to preserve this vibrant part of Missouri's natural heritage. All net proceeds from sales of this collectable, large-format book will go to wetland conservation work. For more information, visit



mochf.org/2014/04/book-waterfowl-hunting-and-wetlands-conservation-in-missouri.

You can order copies at mdcnatureshop.com.

Hunting, Fishing Apps Available

Missouri's 1.1 million anglers and more than 500,000 hunters now can use mobile applications to buy hunting and fishing permits and find fishing spots with Android and Apple mobile devices.

"MO Hunting" and "Find MO Fish" are available through Google Play and iTunes stores. MO Hunting lets hunters and anglers purchase and view permits directly from a mobile device and view previously purchased permits. The app lets deer and turkey hunters telecheck their harvests and receive a confirmation number back to the de-



CONSERVATION COMMISSION ACTIONS

The August Commission meeting featured presentations and discussions regarding the 2014–2015 waterfowl season overview, hunter and angler recruitment and retention, and the wetland management plan. A summary of actions taken during the Aug. 21–22 meeting for the benefit and protection of forest, fish, and wildlife, and the citizens who enjoy them includes:

- » **Approved** recommended 2014–2015 waterfowl hunting seasons and limits.
- » **Approved** the advertisement and sale of an estimated 1.04 million board feet of timber from 552 acres of Compartment 31 on Sunklands CA in Shannon County.
- » **Approved** entering into a contract with Demien Construction Company of Wentzville for construction of the Busch Memorial Conservation Area Shooting Range Demolition and Site Preparation Project located in St. Charles County.

The next Conservation Commission meeting is Oct. 16 and 17. For more information, visit mdc.mo.gov/node/3430 or call your regional Conservation office (phone numbers on Page 3).

(continued from Page 7)

vice. They can also view their previous telecheck harvest information. Learn more and download MO Hunting at mdc.mo.gov/node/28397.

The Find MO Fish app includes map locations of public boat ramps and underwater fish-attractor structures to help anglers guide their boats right to fishing hotspots. Users also can view regulations for particular species and specific areas. The app provides a handy Fish ID Guide along with annual fishing prospects and weekly fishing reports for many Missouri lakes, rivers, and streams popular for fishing. Learn more and download Find MO Fish at mdc.mo.gov/node/15421.

Sight in Deer Rifles on Department Ranges

If you haven't checked the sights on your deer rifle, now is the time, and a Conservation Depart-

ment shooting range is the place. To provide citizens with safe and convenient places to shoot, the Department offers more than 70 unstaffed shooting ranges throughout the state. For safety reasons, these designated ranges are the only places on conservation areas where target shooting is allowed. The Conservation Department also manages five staffed shooting ranges. Some are accessible to shooters with mobility impairments. Many have multiple shooting stations with covered shooting benches, target holders, and other amenities. To find one near you, visit mdc.mo.gov/node/6209.

Table Rock Makes National Top 10 List

If you think Table Rock Lake is one of the best places in the world to camp and fish, you aren't alone. The Recreational Boating and Fishing

Foundation (RBFF) recently rated Table Rock State Park No. 9 on its list of the top 100 fishing and boating spots in the United States.

Frank Peterson, president of the Virginia-based RBFF, says criteria for selecting Table Rock included being within an hour's drive of an urban area, having marinas, boat ramps, restrooms and other facilities, and "stellar fishing opportunities."

The combination of the Missouri Department of Natural Resources' top-notch park, proximity to Springfield, and thriving bass, crappie, and bluegill populations managed by the Conservation Department put Table Rock in the top 10. If you haven't been fishing, camping, or boating at Table Rock, you are missing a national treasure.

Table Rock wasn't the only destination included in RBFF's America's Top Family Fishing and Boating Spots. August A. Busch Memorial Conservation Area in St. Charles County was No. 36 on the list. For more information, visit bit.ly/YIB6so.

Field to Freezer Venison Workshops

Novice hunters can learn how to turn harvested game into neat packages of lean, healthful meat at Discover Nature — Field to Freezer workshops sponsored by the Conservation Department. These events cover regulations, field dressing, supplies, transporting, and techniques for processing deer and other game. Events are scheduled for:

- **White-Tailed Deer Processing**, 9 a.m. to noon Oct. 4 at the August A. Busch Shooting Range and Outdoor Education Center, St. Charles. Call 636-441-4554 for information and reservations.
- **General Wild Game Processing**, 6 to 9 p.m. Oct. 7 at the Cape Girardeau Conservation Nature Center. Call 573-290-5218 for reservations.
- **Discover Nature — Families Field to Freezer White-Tailed Deer Processing**, 6 to 9 p.m. Oct. 14 at Jay Henges Shooting Range and Outdoor Education Center in St. Louis County. Call 636-938-9548 for information and reservations.
- **White-Tailed Deer Processing**, 6 to 9:30 p.m. Oct. 14 at Lake City Shooting Range and Center, Buckner. Call 816-249-3194 for information and reservations.
- **Discover Nature — Families Venison Sausage Making**, 6 to 9 p.m. Oct. 16 at Jay Henges Shooting Range and Outdoor Education Center in St. Louis County.



WHAT IS IT?

Woolly Bear Caterpillar | *Pyrrharctia isabella*

Called "woolly bears" or "woolly worms," these caterpillars are the larvae of Isabella tiger moths. They are usually black on the ends of the body and rusty red or brownish in the middle. Woolly bears graze on a wide variety of vegetation, including maple and elm trees, grasses, sunflowers, clovers, and more. In autumn, they are commonly seen crossing roads as they search for sheltered places to overwinter. Isabella tiger moth caterpillars have a remarkable capability to withstand freezing temperatures. They pupate within cocoons made from their hairs and emerge as adults in the spring. Folklore has long maintained that the varying widths of the caterpillar's bands are useful for predicting the harshness of the next winter, adding to this animal's mystique. —*photograph by Noppadol Paothong*

Call 636-938-9548 for information and reservations.

- **Deer Field Dressing, Packaging, and Cooking**, 9 a.m. to noon Oct. 16 at August A. Busch Shooting Range and Outdoor Education Center, St. Charles. Call 636-441-4554 for reservations.
- **White-Tailed Deer Processing**, 1:30 to 4:30 p.m. Oct. 18 at the Runge Conservation Nature Center in Jefferson City. Call 573-751-4115 for reservations.
- **White-Tailed Deer Processing**, 9 a.m. to noon Oct. 25 at Andy Dalton Shooting Range and Outdoor Education Center on Bois D' Arc Conservation Area in Greene County. Call 417-742-4361 for reservations.
- **White-Tailed Deer Processing**, 6 p.m. Nov. 4 at the Conservation Department's Northeast Regional office in Kirksville. Call 660-785-2420 or email Robert.Garver@mdc.mo.gov for information and reservations.

After the excitement of hunting your quarry, make the most of cooking and eating it. Start with this classic recipe, or discover other tantalizing options for Missouri's wild game and edibles on our Cooking page at mdc.mo.gov/node/3500.

Venison Pot Roast With Vegetables

Ingredients:

- 2-3 pound boneless venison roast
- 2 tablespoons cooking oil
- 1/2 cup chopped onion
- 1 clove sliced garlic
- 2 teaspoons beef bouillon
- Salt and pepper to taste
- Peeled potatoes, carrots, and onions

Instructions:

Remove all fat from roast. In a 4- to 6-quart pot, brown meat in oil. Blot any remaining oil or fat. Add onion, garlic, bouillon, salt, and pepper. Pour in 1 to 2 cups water and cover. Bring to a boil, then reduce heat and simmer, covered, for 1 1/2 to 2 hours until meat is tender. Add vegetables cut into chunks for quicker cooking. Make sure vegetables are covered with broth or add enough water to cover. Allow vegetables to simmer in broth for 30 minutes.

This recipe can also be found online at mdc.mo.gov/node/11046.

DID YOU KNOW?

Conservation makes Missouri a great place to hunt and fish.

Federal Excise Taxes on Outdoor Equipment and Supplies Support Conservation

» **When you buy a gun, ammunition, archery equipment, or fishing tackle**, you are investing in the conservation of Missouri's fish and wildlife. Federal taxes paid on those purchases come back to Missouri to build boat ramps, maintain shooting ranges, provide hunter education, and to create public places to hunt and fish.

» **About \$20 million dollars** are received each year by the Missouri Department of Conservation from federal sources. The majority of this federal assistance comes from the U.S. Fish and Wildlife Service via the Wildlife Restoration and the Sport Fish Restoration programs. This dedicated and permanent funding is divided among all state fish and wildlife agencies using a formula based on the size of the state and the number of paid hunter permits and angler licenses in each state. Each state must guarantee permit dollars will not be diverted for other purposes in order to receive funds. Congress also can't redirect the funds from these two separate programs, which are derived from excise taxes collected from hunting or fishing equipment.

» **The Federal Aid in Wildlife Restoration (Pittman-Robertson) Act** was passed in 1937, with overwhelming support from hunters and the hunting and shooting sports industries. The funding comes from an excise tax on firearms, ammunition, and archery equipment to support scientific wildlife research, manage wildlife habitats, provide public access for hunting, and other conservation-related activities. Over the years, funding from the wildlife restoration program has helped bring back many wildlife species in Missouri, including ducks, wild turkeys, and white-tailed deer. Funds also provide for hunter education programs and shooting range management.

» **Following the success of the wildlife program**, the Federal Aid in Sport Fish Restoration (Dingell-Johnson) Act was passed in 1950 to improve aquatic habitats and to restore sport fisheries. Funded by excise taxes on fishing equipment, trolling motors, motorboat and small engine fuel, and the import duties on tackle and pleasure boats, this program is used in Missouri to develop "close-to-home" fishing and boating opportunities, produce fish for angling enjoyment, and to teach people to fish and appreciate our aquatic resources.

» **These federal funds represent** our past investments in land, lakes, boat ramps, and waterfowl areas. These funds also serve as a foundation for our current investments in Missouri's fish and wildlife resources. Hunting and sport fishing are still favorite outdoor pastimes for many of us — let's not forget how much they still contribute to conservation efforts here in Missouri!

The Biggest Bird Feeder

Success for all birds through
Missouri's quail restoration efforts

BY BILL WHITE

The diversity of native wildflowers, weeds, and legumes is highly attractive to the type of insects that feed both songbird and quail broods alike. Photograph by David Stonner.



WHEN I THINK OF A BIRD FEEDER, I typically think of the array of boxes, tubes, or trays of seed that people have in their backyards to help sustain birds during the winter. Last January, I got a view of a different kind of bird feeder while I was hunting quail on private land, just hours ahead of a big snowstorm in central Missouri.

There was about an inch of powdery snow on the ground from an earlier snow shower. I was astounded at the amount of songbirds in the field of native grass and wildflowers. Even more astounding was the amount of songbird tracks in that powdery snow, especially in patches of wildflowers. The birds were fueling up on wildflower seed ahead of the weather, and I just happened to be in the right place at the right time to see it. It was an impressive experience to witness the flocking of hundreds and hundreds of songbirds into what had been planted for bobwhite quail habitat. What I was standing in that morning was a 20-acre bird feeder!

We did find quail, of course, and they too had been feeding in the wildflowers ahead of the storm. But what I saw that day made me think of last summer, when I helped conduct breeding bird surveys in a north Missouri Quail Focus Area.

Quail Focus Areas

I was one of dozens of volunteers in seven states piloting a national effort to inventory habitat conditions and bird populations within quail focus areas. This national pilot project is coordinated through the National Bobwhite Conservation Initiative. These seven states are testing a combination of bird and habitat monitoring that will eventually be used by the 25 states with bobwhite quail. The aim is to correlate bird population response to habitat improvements in a coordinated multi-state effort. These surveys are taking place in designated quail focus areas (QFA) in each of the pilot states.

A QFA is an area where quail habitat management is intensified through incentives and assistance to landowners. The Department of Conservation's 10-year quail plan focuses our attention on these QFAs. Many of our QFAs were developed with the introduction of the Department's quail plan in 2004 and have received our concentrated attention ever since.



Bobwhite quail

In June, I was leaving the house around 4 a.m. each morning to head to our focus area. I would sit for a few minutes at a randomly selected point listening for bird songs, record what I heard, then move on to the next point. We compared what we found in the focus area to a similar area outside the focus area that was not being managed for quail by the landowners. The results are telling the same story that we have been touting for several years regarding bobwhite quail: "It's the habitat!"

For Missouri's contribution to the pilot project, we chose to survey 5,200 acres of private land in northwest Missouri where quail habitat management has been intensified through incentives and assistance to landowners by Department of



Prescribed burns help manage native grassland, which benefit quail and other upland birds. Fire can restore natural communities and stimulate desirable plants.

Conservation staff and Quail Forever volunteers since 2005.

Private landowners in the QFA have installed habitat improvements such as 24 miles of edge over 770 acres of quail-friendly grass and wild-flower plantings, and they used prescribed burning on 200 acres each year. These practices were implemented through USDA Farm Bill programs such as the Conservation Reserve Program and





the Wildlife Habitat Incentives Program and through funding provided by the 2C Chapter of Quail Forever and the Missouri Department of Conservation. Technical assistance was provided to landowners by the Natural Resources Conservation Service and the Missouri Department of Conservation.

More Quail, More Songbirds

Our surveys indicate almost 5 times more male quail were calling in our focus area than the nearby control. There were also more of the key declining grassland songbirds like dickcissels, eastern meadowlarks, and field sparrows in the focus area. These were not all of the songbirds calling in the area, but key species we are looking for in our focus area.

During our survey, we had several listening points where there were so many quail and songbirds calling that it was hard to keep track. Looking around these points, it was evident that habitat improvements had taken place. But even within the focus area, we saw the absence of quail and songbirds at those few survey points surrounded by fescue or Reed canary grass.

We have always been confident that quail habitat management improves songbird populations, and this survey provided the evidence, at least during the breeding season. But what I witnessed on the January quail hunt ahead of the approaching snowstorm was more proof.

However, this bird feeder isn't just for the winter. The reason our restoration of quail habitat is so inviting to songbirds is that it still acts as a bird feeder even during the breeding season. The diversity of native wildflowers, weeds, and legumes is highly attractive to the type of insects that feed both songbird and quail broods alike.

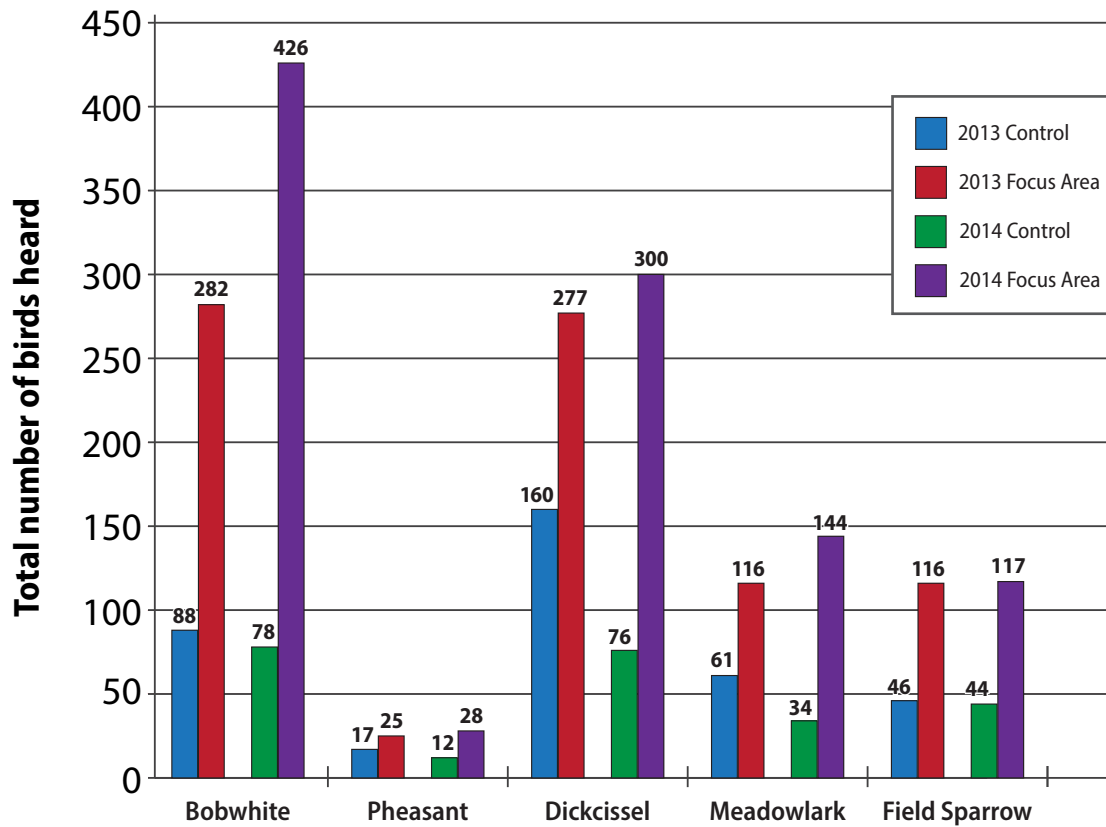
Fall Quail Covey Count Surveys

Last fall, the Department and our partner Quail Forever began an intensified effort to inventory quail numbers on several of our private land QFAs across the state for the first time.

Until now, only two focus areas in the entire state were inventorying bird numbers each fall

The more of the QFA that has habitat integrated into the landscape, the higher the quail population will be inside of the focus area.

Focus Area Monitoring Spring 2013 and 2014



Bobwhite quail



Ring-necked pheasant



Dickcissel



Eastern meadowlark



Field sparrow

Bird numbers in the quail focus area (QFA) compared to those in an adjacent control area. Quail numbers in the QFA jumped 50 percent since 2013. All songbirds were also higher in the QFA than the control. All species declined in the control area where no management occurs.

with help from Quail Forever volunteers and Department staff. This year, we partnered with Quail Forever to survey four additional focus areas around the state. The proof that our concentrated habitat efforts are the key to quail recovery has never been more evident.

The Knox County Quail Focus Area has been surveying quail numbers inside and adjacent to the focus area for five years. With this long-term survey they witnessed a yearly increase in quail numbers in the focus area until “Snowmageddon” hit at the end of January 2011, leaving a deep layer of snow and ice on the ground through February. Quail numbers inside and outside the QFA dropped drastically that year. However, in 2013, there was a 21-percent increase in quail numbers inside the QFA, despite a continued long-term decline in quail numbers surveyed outside the focus geography. This year’s surveys showed five

times more birds in the focus area than outside.

The Carroll County Quail Focus Area began its first bird surveys with a spring whistle count and later conducted a fall covey call count with help from Department and Quail Forever staff. There are 10 times more coveys this fall in the QFA than in the nearby unmanaged survey area.

The Scott County Quail Focus Area had trouble finding an unmanaged geography to survey. There were enough habitat improvements through USDA and Department landowner incentive programs that even the geography chosen for a control had numerous native grass field borders. Yet the numbers within the managed focus area were still 30 percent higher than the control.

The Stoddard County Quail Focus Area saw a 31-percent increase in quail numbers over last

Enjoying the benefits of good habitat

The best hunts I have had this year occurred at the end of the 2013-14 season and prompted my older son, Adam, to start looking for a bird dog of his own. Adam's friends like to bird hunt, but they don't have dogs, so they invite my dog up each year to hunt with them — and I get to go along. Fortunately for us, they have connections with landowners in one of northwest Missouri's Quail Focus Areas (QFA).

We hunted a 40-acre field that had a 60-foot quail field border planted to wildflowers and native grasses around the entire perimeter as well as scattered trees and shrubs in a couple of old fence lines. Snow covered much of the landscape, so we were hoping the quail would be concentrated in the bird feeder planted around this field. We were not disappointed; about 5 minutes into the hunt, a covey of 20

quail flushed wild in front of the dog. We hunted the singles, experienced some awesome retrieves by my young German shorthair, Trapper, and ran into another big covey of nearly 20 birds. We finished out the hunt by hunting the singles and again had some great dog work.

The next day we hunted a farm in this same QFA that was nearly surrounded by a quail field border planting. A large wooded ditch through the center of the farm had a switchgrass filter strip planted on both sides of it. The field border planting had been mowed, and the remaining cover in the strip had drifted full of snow. So we moved to the filter strips. We are still not sure how many pheasants we saw that morning, as the birds moved from one side of the draw to the other into the grass strips. While chasing pheasants we ran into two coveys of quail, one of which contained more than 15 birds. The pheasants had not been hunted before and were holding for the dog early on. As the hunt progressed, the birds started running ahead of us. My dog had at least 20 solid points that morning between the quail and pheasants and he retrieved all but one bird. Just the kind of hunt a young dog needs and just the kind of hunt my son needs to pique his interest in getting his own dog.

The day before the end of the season, I travelled to southeast Missouri



Bill White and his bird dog, Trapper.

for a Bootheel quail hunt, which had been cancelled in December due to weather. This QFA has had thousands of acres of quail field borders planted through USDA Farm Bill conservation programs and the quail have responded to the bird feeder plantings. Our season ended with six coveys of quail and catching up with old friends (well, ok, I was the old one). It was heartening during this last week of quail season to be with hunters in their mid-20s and 30s. And even more heartening that I could keep up with them.

These planted bird feeders benefit quail, songbirds, and other species, and they provide the setting in which to make great memories. Learn more about managing your land for quail at mdc.mo.gov/node/3678.



year, and no birds were found on farms that had been mowed late in the summer for weed control.

.....
The Cass County Quail Focus Area was surveyed for the first time in 2013 and had two times more coveys in the QFA than in the unmanaged area.
.....

Our best success for quail restoration appears to be in areas where a number of landowners work together in a concentrated area. The more of the QFA that has habitat integrated into the landscape, the higher the quail population will be inside of the focus area. The state's quail population has declined to the point that individual landowners may not be successful in bringing quail back to a property. Or it can be difficult to sustain a quail population over the long-term. This is especially

true when isolated quail habitat efforts are totally surrounded by inhospitable quail habitat and quail are uncommon on the landscape.

When a bird feeder the size of a field is offered, the birds respond. They respond because of the food in the winter and the diversity of insects when they are nesting and raising a brood. Even if you don't have a larger acreage, native wildflowers in your home landscaping will still attract songbirds and pollinators. Your efforts make a difference. ▲

Bill White is the division chief for the Department of Conservation's Private Land Services Division. He enjoys long walks behind slow bird dogs, managing for wildlife on his own property, and spending time with his sons and grandchildren.



BETTER HABITAT EQUALS BETTER FISHING

Learn to fish
habitat structures
for great results.

BY SHANE BUSH

Crappie

NOPPADOL PAOTHONG

MY DAD USED TO TELL ME, “If you aren’t getting hung up, you aren’t fishing where the fish are.” This proved to be true, as we would routinely catch our daily limit near fish habitat structures.

Whether for resting, feeding, or a place to hide, fish habitat structures (brush, rocks, stumps, etc.) attract bass, crappie, and many other species of fish in Missouri’s lakes. These areas provide great fishing, but they can also increase your chances of getting hung up and losing your lure. Follow these tips to increase your odds of catching fish and to minimize frustration.

Not all fish habitat structures are created equal; they vary based on habitat type and location. Throwing out marker buoys on each side of the structure you’re fishing is helpful to fish around it more effectively.

The Department of Conservation has managed fish habitat in Missouri lakes for decades. Most of this work is conducted by local biologists who interact with anglers at their regional lakes. As a result, many of the fish habitat structures placed in Missouri lakes are where extensive research, surveys, and local anglers have identified the best locations for attracting fish.

However, not all fish habitat structures are created equal. They vary based on habitat type and location. Some structures routinely hold fish, while others may not be as productive. When fishing habitat structures in a lake, do not get discouraged if you are not catching fish immediately. In many cases, changing your lure presentation may help, but other times the fish may not be in the area that particular day. I’ve fished many habitat structures where I haven’t caught anything on one day and then caught numerous fish on the same structure the very next day. I’ve also caught many large fish on a habitat structure one day and only small fish the next. Fish species such as bass and crappie will often follow schools of baitfish that may be near a habitat structure one day and not the next. Fish use of habitat structures also varies





When you need to fish in the middle of a structure, use weedless jigs such as this one for bass. Fish them slowly through the structure and tap the brush with the jig. Bites come when the jig falls off a branch or other part of the structure.

based on the time of year. During the winter and summer months, fish often use habitat in deeper water, while during the spring and fall, fish are frequently found near shallower habitats.

Techniques

Numerous fish species use fish habitat structures, including bass, crappie, sunfish, and catfish. There are a variety of techniques to try when fishing around habitat structures. These may vary based on the type of fish you're trying to catch, the time of year, time of day, weather, barometric pressure, and water clarity. On some days, fish will be suspended over the top of a habitat structure, while other days they may be down in the middle of the thickest part of the structure. Knowing the depth, size, and orientation of the structures you're fishing will greatly improve your odds of catching fish around them. Good electronics (like a depth finder) can help with finding and determining these characteristics of the habitat structures. It is a good idea to use your trolling motor when you are close to a shallow habitat structure because the sound and vibration of the outboard motor can spook fish away.

Bass

Largemouth bass are by far the most popular and prevalent bass species found in Missouri lakes. They are also very habitat oriented. Some of Missouri's larger impoundments (mainly in southern Missouri) contain spotted (Kentucky) and smallmouth bass, which can also be found near habitat structures.



Knowing the depth, size, and orientation of the structures you're fishing will greatly improve your odds of catching fish around them. A depth finder can help find and determine the characteristics of habitat structures.

Although some techniques for bass fishing involve lures with multiple hooks, you do not want to fish that type of lure in the middle of a large habitat structure, such as a brush pile. Instead, use your electronics to determine the depth of the structure and where its edges are. I like to throw out marker buoys on each side of the structure so I can fish around it more effectively.

Crankbaits, spinnerbaits, and drop-shot rigs can be effective when fished above or just off to the side of a habitat structure. Top-water lures can also work well on some days to "call up" fish out of habitat structures.

For those days when bass are down in the middle of a brush pile, fish with lures such as weedless jigs or worms and bring them through the middle of the pile, tapping

the branches with your lure and letting it fall back into the pile. Many bites will occur when the lure falls off the branch. For these applications, heavier fishing line such as 14- to 20-pound test line is necessary to bring fish out of the brushpile.

In many cases, the largest bass will be in the middle of the pile so be sure to fish each structure thoroughly. Use multiple colors and lures, before heading to the next one. Depending upon the depth of the structure, you may want to use heavier lures for fishing the deeper water or when fishing on very windy days.

Crappie

Crappie are extremely structure-oriented fish and are regularly found near fish habitat structures. Studies have shown that crappie often prefer brush piles composed of cedar trees, but they can be found on nearly every kind of woody structure in a lake. As a general rule, the bigger the pile, the more crappie it will attract and congregate.

Use the same method for fishing a structure for crappie as you would for bass. Start by fishing above and around the piles to catch the suspended fish. Smaller 1/32- to 1/8-ounce jigs, minnows, or a combination of both work well for this application. The weight of the lure will depend on the depth of the water and the amount of wind.

If the crappie do not bite when you fish around the structure, you may need to fish in the middle of it. Weedless jigs work well for this; fish them slowly through the



When fishing near habitat structures for bass, in many cases, the largest bass will be in the middle of the pile.

structure and tap the brush with the jig. Again, many of the bites come when the jig falls off a branch or other part of the structure.

I prefer to use light line such as 4- or 6-pound test line when fishing for crappie, though a heavier fishing line may help reduce the number of jigs or hooks you break off if you get hung up in the brush pile.

Sunfish

Many species of sunfish, including bluegill, green sunfish, and rock bass or goggle-eye, can be caught near habitat structures as well. Structures congregate large numbers of small sunfish, which are a primary source of food for other fish such as bass and crappie. They can also hold a lot of larger sunfish because the sunfish feed on the aquatic insects and invertebrates that colonize in the algae on the structures.

Many of the same techniques for catching crappie around habitat structures can be used for catching sunfish. Live bait such as crickets and worms fished above and around structures can produce good catches of larger-sized sunfish. Use a float to keep your hook above the structure. Many of the habitat structures located in shallower water will hold sunfish throughout much of the year, thus providing good shoreline fishing opportunities.

Catfish

Both flathead catfish and channel catfish can be caught near habitat structures and are typically located in the middle or underneath a habitat structure. As a result, it may be necessary to fish within the structure. A weedless hook, baited with either live bait for flatheads or cut or prepared bait for channels, fished on heavy 30- to 60-pound monofilament can be effective for catching these fish out of a habitat structure. Jug lines and trot-lines can be set near habitat structures as well, but are likely to be more effective catching catfish at night as they move away from the structure to feed.

How to Find Habitat Structures

The Department of Conservation records the locations of the fish habitat structures they put into lakes using GPS technology. They also post signs along the adjacent



Flathead catfish are typically located in the middle or underneath a habitat structure.

PARTNERSHIPS IMPROVE WATER QUALITY AND FISHING

The Department of Conservation funds the construction of many fish habitat projects throughout the state each year. It also uses outside funding and partnerships to take a lake-wide and watershed approach to improving fish habitat.

The Table Rock Lake National Fish Habitat Initiative (NFHI) is one such example. In 2007, the Department partnered with Bass Pro Shops, the National Fish and Wildlife Foundation, the Arkansas Game and Fish Commission, the U.S. Army Corps of Engineers, and many other partners to begin a six-year project aimed at sustaining and improving fish habitat in two of our state's largest and most popular reservoirs, Table Rock Lake and Lake Taneycomo. The project continued through December 2013 with funding totaling \$4 million. During this timeframe, 2,024 fish habitat structures were installed in Table Rock Lake. The coordinates of these structures can be found at: <http://egis.mdc.mo.gov/fishattractorstablerocklake>.

The Department also worked with the James River Basin Partnership and Table Rock Lake Water Quality, Inc. to implement a program to improve water quality throughout Table Rock Lake. This program offered a \$50 incentive to landowners in the Table Rock Lake and James River watersheds for preventative pumping out of septic tanks before failure occurred. More than 2,000 septic tank pumpouts were completed, a potential reduction of more than 2 million gallons of septic effluent entering the Table Rock Lake watershed. This also helped reduce

the amount of nitrogen entering the lake by 550 pounds per year.

To reduce the amount of sediment transferred from the watershed to Table Rock Lake, the Department worked with landowners to provide a cost-share program to stabilize highly eroding streambanks. Eight cost-share projects were completed in the Table Rock Lake watershed and approximately 3,610 linear feet of streambank was stabilized, and many acres of riparian corridor were established.

Habitat improvements were completed in the upper portion of Lake Taneycomo, which is the tailwater of Table Rock Lake and Missouri's largest and most popular trout fishery. Boulder clusters were installed in the upper mile of the

lake to add diversity of habitat to the lake, create improved feeding areas for trout and other species of fish, and increase angling opportunities.

The Table Rock Lake NFHI project builds upon a long-standing public/private partnership in southwest Missouri to improve and restore fish habitat in Table Rock Lake, Lake Taneycomo, and their watersheds through cover augmentation, watershed management, and other water quality-related projects. This project was an excellent opportunity to maintain and enhance fish habitat in and around two of the Midwest's most popular sport fisheries. It has become a national example of sustaining and improving reservoir sport fish populations through large-scale habitat improvements.



shoreline in some lakes to mark them. These locations are available to the public on the Department website at mdc.mo.gov/node/10182. Anglers can download the coordinates directly to their GPS unit using the EasyGPS™ software. Certain types of GPS sonar units require that coordinates be in a specific type of format before downloading to the unit. These brands usually have free software available that will change the file format available on the Department's website. Another useful tool for finding habitat structures is the Find MO Fish application for Android and Apple smartphones (mdc.mo.gov/node/15421). This app uses your phone's GPS to show

your current location and the location of any fish habitat structures on the lake you're fishing.

The next time you're planning a fishing trip, do a little research beforehand and see what fish habitat locations are available. Whether you have fished a certain lake for years or it's your first time, fishing habitat structures could improve your odds of success. ▲

Shane Bush is a fisheries management biologist for the Conservation Department in Branson and has worked for the Department for 10 years. In his free time, he enjoys fishing, hunting, and spending time with his family.

A large flock of mallards is captured in mid-flight over a wetland. The ducks are scattered across the upper two-thirds of the frame, with their wings spread wide, showing the characteristic blue and white patterns. The background is a dense, out-of-focus field of tall, golden-brown grasses. In the lower portion of the image, a body of water is visible, with several ducks swimming. The overall scene is dynamic and captures a moment of natural activity.

Duck Creek **MAKEOVER**

One of the Department's oldest wetland management areas is being updated for improved function, better habitat, and public accessibility. **BY FRANK NELSON**



Flocks of mallards and northern pintail use shallowly flooded moist soil habitat at Duck Creek Conservation Area during fall migration. Photograph by Noppadol Paothong

H

OME MAKEOVER TV SHOWS ARE a dime a dozen these days. An energetic designer and a work crew show up at the front door of an unsuspecting family to breathe new life into their home

and enhance the form and function of their derelict space. After successfully navigating a few road bumps, slapping up some new trim and a fresh coat of paint, the family has a new home.

That is great for reality television and generating business at home improvement stores, but if you're like the rest of us, home renovation isn't an easy task, and it most certainly doesn't occur overnight. Over the past few years, we've been doing some renovation work of our own at Duck Creek Conservation Area. This is one of the Department's oldest wetland management areas, and it was showing its age and had its own unique set of challenges (more *This Old House* than *Spice Up My Kitchen*). While the renovation isn't quite complete, we've made it over the hump and are able to look back and see that things are shaping up nicely.

By
reconfiguring
levees and
sloughs
we've made
better use
of our space
and created
a greater
diversity of
habitats.

HISTORIC SETTING

The neighborhood isn't the same as it used to be. Actually, habitat and land use is constantly shifting right before our eyes. Currently, we only



Duck Creek Conservation Area is located nine miles north of Puxico in Stoddard, Bollinger, and Wayne counties.

have 13 percent of the wetlands that used to lie across Missouri's floodplains. In southeast Missouri, these wetlands were bottomland forests and open swamp. Today, the Duck Creek Conservation Area and the adjacent Mingo National Wildlife Refuge make up 23,794 acres of bottom ground and contain the best and biggest representation of these remaining habitats in the state.

Even in the 60-plus years that these two neighboring public areas have been around, the land isn't the same as it used to be. Some forests have grown up, while other trees have aged and died. In other places, levees have been constructed just as farm fields on private land have been leveled. Ditches have required maintenance, and water control structures have rusted out and needed to be replaced. The Department's Golden Anniversary Wetland Initiative has served to address the wear of time on older areas such as Duck Creek.

Before diving into the work, the Department needed to identify the past conditions, the changes that have occurred over time, and the habitats and opportunities that exist today. Through this review, four main objectives to renovate the "old house" of Duck Creek were identified.

1. Much like a building with poor ventilation, one goal was to restore the flow of water to and through Duck Creek.
2. Similar to a small farmhouse that has been added onto over the years, the function of the space isn't always optimal as rooms were piecemealed together. By reconfiguring levees and sloughs we've made better use of our space.
3. In the same way earthen homes help protect and insulate from climatic extremes and disastrous events, restoring a diversity of plant communities will help the wetlands of Duck Creek be more resilient through floods and drought.
4. Just as adding safety features and redesigning rooms accommodates a range of ages and abilities in a family home, updates have been made to meet the needs of the range of people who come to enjoy the outdoors at Duck Creek.





Mallards

During the summer and early fall, Duck Creek is home to breeding and migratory wood ducks. Later in the fall and winter, late migrants such as mallards visit Duck Creek.

The underlying philosophy is understanding that quality wetland habitats are the result of complex interactions between water, land, and the associated plants and animals. If the opportunity exists, it is easier to let nature do its own thing than forcing it into a box. If the habitat is good, the critters will respond, and likewise the public use and experiences will benefit.

VENTILATION: RESTORING NATURAL WATER FLOW

In the same way that the movement of fresh air prevents stagnation, the movement of water on and off the land keeps wetlands fresh and productive. This flow also benefits the surrounding land.

We identified the location of historic drainages and installed a series of broad spillways (greater than 250 feet across) along the ditch and levee system to allow water to pulse through



Wood ducks

the notches during large rains and spread out and through the wetland pools. The first broad spillways were installed on either side of the Pool 3 timbered impoundment, just prior to the historic spring flood of 2011. The spillways operated successfully during the flood, allowing water to move through 500 acres without being trapped on the trees too long during the growing season. Additionally, this provided flood relief and helped reduce the duration of flooding on adjacent private land. Another benefit was the use of this flooded habitat by 46 differ-



The renovation work in Units A and B allow for a mosaic of water depths, wetland plants, and food plots to be managed through the summer months.

ent species of fish, nine of which were species of conservation concern or state endangered, and 17 species of amphibians and reptiles. A few years later, spillways were installed in the open swamp habitat in Units A and B. Preliminary sampling has shown the early colonization of 29 different species of fish already using the reconnected habitats.

It is often easy to tell the difference between a natural stream and a ditch. Ditches are typically deep and straight to get water off fast and efficiently, while natural channels meander back and forth without any urgency. The trick to restore natural flow patterns is to unstraighten the artificial streamline and raise the once degraded channel bed. The open swamp habitat in Units A and B was ideal for this treatment. A 1-mile section of entrenched ditch was filled in and converted into a much shallower 2-mile meandering channel that now weaves its way back and forth as water spills out into the bottoms. Just in this section, we have produced four times as much

streambank edge for herons and shorebirds to forage from in the summer and a lot of flight deck for teal to buzz through in the early fall.

The reconfigured channel allows us to capture water from the surrounding watershed instead of quickly passing us by as it had in the past. Additionally, we use our existing wells to simulate back-flooding and distribute water through this curvy channel to flood the adjacent floodplain habitats for migratory waterfowl and early season duck hunting opportunity.

RECONFIGURING THE OL' FARM HOUSE

Over the years, adding rooms here and there helps accommodate a growing family, but it isn't as ideal as having an architect create the structure from scratch. In a similar fashion, levees had been constructed over the years that didn't make the best use of space on Duck Creek.

By using the fall of the land and reconfiguring the open swamp habitat in Units A and B, we have enhanced our wetland management capa-



Abundant aquatic vegetation produces habitat for bugs, snails, fish, and other wetland wildlife.

bility. Short levees placed along the contours of the land ensure that the majority of the shallow water column is distributed evenly to allow native seeds, bugs, and plant parts to be available for foraging waterfowl. The restored sloughs across these impounded flats provide habitat diversity and a more natural means to move water off and on the land at appropriate times.

EARTHEN INSULATION: RESTORING VEGETATION

The advantage of earthen homes is that the ground and plants buffer the climatic extremes, keeping the house safe through storms and regulating the heat and chill through the seasons. Diverse wetland vegetation also provides a buffer through climatic extremes. Some plants prosper during drought, while others thrive through flooded conditions.

Post-construction in Units A and B, we experienced two drastically different weather patterns, yet still produced adequate food for migratory waterfowl. Immediately following the completion of most of the dirt work, the drought of 2012 hit. Despite the lack of any water control, abun-

dant smartweed, millet, and toothcup was produced, especially along the saturated edges of the restored sloughs. Last year, a much wetter year resulted in a bumper crop of millet and sedges in the drier locations, duck potato and plantain in the wetter pockets. This illustrates the variation, yet consistency of food production that can occur in resilient wetland habitats.

Within the newly constructed sloughs, other plants now have more space to stretch their stems and sink their roots. Species like watershield and common water-starwort have responded quickly through natural germination. In other locations, we decided to give nature a boost by planting species that are tougher to establish due to their limited distribution. While pickerelweed, bull's tongue, and water stargrass may not be on the top 10 list for well-known wetland species, they provide structure, shade, and food for wetland critters of fin and feather. During the past two growing seasons, these plants have flourished and expanded the diversity of habitat available in Units A and B.

By establishing a foundation for native plants, we have provided an open buffet for species passing through the basin. In the past two years on Duck Creek and Mingo, the peak waterfowl numbers for the basin at the end of November and beginning of December was around 124,000 in 2012 and just under 106,000 in 2013. Depending upon the kind of duck and the time of year, the birds search for a variety of food types, including seeds, bugs, plant parts, and waste grains.

In early fall, the native seeds and bugs found in Units A and B provide energy, but ducks also

Unit A in October 2013 illustrates what the flooded habitat looks like as fall migratory waterfowl begin to arrive at Duck Creek.



require essential nutrients and proteins for a balanced diet that will sustain them on their continental trek. Successive cold fronts typically usher early migrants on south and eventually bring down the mallards. As the season progresses, the green-headed ducks will begin to use the windbreaks and foods that the flooded timber and wooly buttonbush provide.

Building off our existing blocks of trees and expanding forested habitats is another component in restoring our native plant communities. Although our initial efforts may not be obvious, we're laying the groundwork for future forests. On the drier edges of Units A and B, 12,000 trees have already been planted to beef up and broaden the woody corridor along McGee Creek.

ACCOMMODATING MULTIPLE PUBLIC USES

House renovation projects often reflect the people living in the space. A railing along the deck isn't vital until you have little ones running under foot, and having disabled-accessible doorways may not be considered unless you or your loved one needs them. There is a wide range of people who come to Duck Creek to hunt, fish, or just enjoy the outdoors.

Pool 1 is the 1,800-acre lake in the center of Duck Creek. From January to October this serves as our water reservoir for flooding the timber and is the best flat-water fishing area in the region. From October through December this large pool with scattered cypress and floating plants is the heart of our waterfowl refuge. Several modifications have been made to meet its varying uses.



Planting tree seedlings is another way to restore native plant communities and expand existing blocks of timber.

We've enhanced our ability to capture water within the lake by replacing worn-out water control structures. This helped the management of the area, but it also helped us work with our surrounding landowners. Another enhancement to Pool 1 is the addition of two floating fishing docks. These are disabled-accessible jetties that extend 40 feet over the water for those who may not have access to a boat. Additionally, the once-crumbling boat ramps have been renovated and now provide courtesy docks to aid in trailering your boat.

The renovations have also added new opportunities for waterfowl hunters. In the past, using stationary waterfowl blinds was the dominant hunting style besides the wade-and-shoot oppor-

Funding the Renovations

The North American Wetland Conservation Act was critical in providing federal dollars for three grants that have benefited the Mingo Basin. This program rewards initiatives that include multiple partners working together towards wetlands conservation for the benefit of wetlands-associated migratory birds and other wildlife. Two grants helped contribute to the Duck Creek renovation costs and the third grant is funding work on Mingo National Wildlife Refuge. These partnership funds have allowed us to make the most out of our collaborative dollar, and we thank them for their donations and collaboration to make this work possible.

Partners

Ducks Unlimited
Wetlands America Trust
National Wild Turkey Federation
Audubon Society of Missouri

Missouri Conservation Heritage Foundation
Missouri Conservation Pioneers
Missouri Bird Conservation Initiative
Missouri Department of Conservation
Missouri Department of Transportation

Mingo Swamp Friends
Mississippi Valley Duck Hunters
Conservation Federation of Missouri
Conservation Employees Credit Union
United Country Realty
Cato Slough Hunting Club, LLC
Greenbrier Wetland Services
Little River Drainage District
Army Corps of Engineers
Natural Resources Conservation Service
U.S. Fish and Wildlife Service – Mingo NWR
U.S. Forest Service



tunity in the timber of Pool 8. We've maintained and updated a few blinds in Pools 2 and 3, which have a rich history. However, in Units A and B, reconfiguring habitat has allowed us to provide for another hunting style. Similar to what hunters encounter at Ten Mile Pond or Otter Slough CA's, in Units A and B hunters now have the freedom to go to where the birds are, within a designated hunting spot. This wade-and-shoot hunting style requires a little ingenuity and can range from using a small, shallow draft boat to hunkering down in the weeds and food plots with your choice of native vegetation, camouflage, or fabricated grass panels. It is a great way to experience the swamp and bag a limit of ducks in the fall.

Much has been accomplished at Duck Creek, and things look great for this upcoming waterfowl season and throughout the rest of the annual cycle for years to come. Like any home renovation, this project is taking a little more time than any reality TV project, and there is still work to be done. These projects have helped the function of the area, which will be reflected in the habitat and public use for the next 60 years.

Waterfowl Hunting on Duck Creek

The fall waterfowl hunting opportunity is allocated through a daily one member per party draw system. More information and a video on this procedure can be found at mdc.mo.gov/node/3719.

Depending upon the available flooded habitat, hunting locations in Units A and B, Dark Cypress, timbered Pools 2 and 3 on Duck Creek, and timbered Pools 7 and 8 on Mingo NWR, will be distributed through the season. Although the timing of flooding and availability of positions may vary, there are a total of 28 blinds on Duck Creek and 26 wade-and-shoot opportunities. If conditions allow, there may be as many as 50 individuals allowed in the timbered wade-and-shoot opportunities in Pool 8, and up to 25 individuals in Pool 7.

Thank you for your support, and for valuing wetland conservation in the state of Missouri. If you are interested in more information on what is going on at Duck Creek, visit our Duck Creek updates page at mdc.mo.gov/node/8656. ▲

Frank Nelson is a wetland ecologist who works closely with other wetland and waterfowl biologists across the state. He enjoys using research and technology to highlight the benefit of wetlands, enhance wetland management, and improve wetland restoration.

Eastern Fox Squirrel

BY EARLY FALL, the walnut trees at the edge of our yard are so laden with fruit, I can barely pass under the drooping branches with my riding mower. The pungent, green walnuts are irresistible to fox squirrels from the surrounding woods, and I take great enjoyment in photographing the bushy-tailed visitors as they collect and store the tasty treasures.

The eastern fox squirrel (*Sciurus niger*), which can weigh up to 3 pounds, is larger than its close relative the gray squirrel, and it is easily recognized by its fox-like coat of red and gray. The fox squirrel is found statewide, but is more common in the northern half of the state where it prefers timbered fencerows, woodlots, and timbered draws. Our farm in Franklin County, with its fencerows of elm, hickory, and walnut, has always been a haven for fox squirrels.

Fox squirrels build leafy nests in tree forks and cavities, and they breed in December and again in June. Young squirrels make their first appearance after six or seven weeks in the nest. I'm always on the lookout, camera in hand, for juvenile squirrels as they poke their heads out of tree cavities for their first look at the world.

Fox squirrels eat a great variety of foods, but the buds and fruits of hickory, pecan, walnut, elm, and mulberry trees are their staples. During spring, I enjoy watching fox squirrels gorge on mulberries from the tree next to our driveway, occasionally glancing up to reveal purple-stained goatees. When the mulberries are gone, a few individuals return to purloin selected items from our garden. By late summer, most of the fox squirrels retreat to the woods to feed on hickory nuts, followed by oak acorns in early fall. Eventually, the more resourceful ones return to our yard for a walnut harvest — squirrel style.

If you've never watched a fox squirrel shuck a walnut, you've missed out. First, it selects the perfect walnut, rolling it around in its paws, and sniffing, I presume, for proper ripeness. Next it finds its favorite perch and begins gnawing away the green husk as it rolls the huge fruit between its incisors. The process is completed in about 10 seconds, leaving the proud squirrel with the dark brown walnut in its furry red paws.

The final step involves storing the nut for future use in winter, when pickings are scarce. Some fox squirrels repeatedly follow an established route back to the woods where they cache their prizes in a favorite hide. Others simply bury their walnuts all over the yard in what appear to be random locations. Every once in a while, an individual will take a snack break from its winter preparation and gnaw a walnut down to the sweet, edible kernel within.

Photographing fox squirrels during the walnut harvest is easy, because, like many other animals, squirrels are creatures of habit. Typically, I just deploy my pop-up hunting blind near a preferred "shucking perch," such as the tree stump in the photograph, and wait for the action to begin. Most of the time, the busy bushy-tails don't even know I'm there.

—Story and photograph by Danny Brown

📷 500mm lens • f/5.6 • 1/320 sec • ISO 400

We help people discover nature through our online field guide.
Visit mdc.mo.gov/node/73 to learn more about Missouri's plants and animals.





Spring Creek Gap Conservation Area

With its combination of forests, woodlands, steep topography, dolomite glades, and old fields, this is an extremely scenic area, especially during the fall color change.

THIS MARIES COUNTY gem offers visitors a glimpse of quality Ozark glade and woodland habitats in central Missouri — if they're willing to hike its rugged hills!

This wooded conservation area originated as the Vichy Tower Site with a purchase of 280 acres in 1948. The name was changed to Spring Creek Gap State Forest after a 1978 acquisition of an additional 1,495 acres. It has since grown to 1,819 acres and is now known as Spring Creek Gap Conservation Area (CA).

One local name for the area is “Little Idaho,” a tribute to the steep, rugged topography that ranges from 760 feet along the intermittent Cedar Creek that bisects the area to just over 1,100 feet on the wooded ridges. There are no designated trails on Spring Creek Gap CA, but foot traffic is allowed on the primitive maintenance roads used by area managers. Users are encouraged to navigate thoughtfully in order to avoid a more strenuous hike than they may have intended.

Visitors will find an array of notable woodland and glade natural communities, especially in the 692-acre Spring Creek Gap Glades Natural Area. This natural area encompasses the central and eastern portions. A large complex of dry chert and dolomite woodlands gives way to open dolomite glades, where exposed bedrock and thin soils support a variety of wildflowers and animals well-adapted to these sites and their harsh, dry, and sunny conditions. Fall foliage can be stunning on the area, especially across sweeping vistas of the surrounding landscape. One of the best views



70–200mm lens • f/4.0 • 1/200 sec • ISO 640 | by David Stonner

reveals itself within a five-minute walk north along the ridge road from the southern parking lot.

Management on the area is focused on maintaining and enhancing its natural glade/woodland complex, as well as the forests found along the creek and up the north-facing slopes. Visitors may see examples of tree removal geared to favor hard mast and stimulate the growth of plants on the woodland floor. This management benefits many species of songbirds, reptiles, and amphibians that call the area home, along with good numbers of squirrels, deer, and turkey that provide rewarding hunting opportunities.

Spring Creek Gap CA is about 10 miles south of Vienna and 14 miles north of Rolla off of Highway 63; turn east on Old 63 for about a quarter mile to the area.

—Adam Jones, area manager



Spring Creek Gap Conservation Area

Recreation opportunities: Hiking, wildlife viewing, and hunting for squirrel and turkey under statewide regulations; deer hunting allowed except archery (antlerless-only and firearms antlerless-only permits are not valid, closed during antlerless portion).

Unique features: Glades, managed woodlands, Cedar Creek, Spring Creek Gap Glades Natural Area.

For More Information: Call 573-815-7900 or visit mdc.mo.gov/a4644



MDC

DISCOVER nature

To find more events near you, call your regional office (phone numbers on Page 3), or visit mdc.mo.gov and choose your region.

FALL FAMILY CANOEING

OCT. 4 • SATURDAY • 1–3 P.M.

Southeast Region, Cape Girardeau

Conservation Nature Center, 2289 County Park Drive, Cape Girardeau, MO 63701

Registration required, call 573-290-5218

Ages 7 and older, families

Learn basic canoe strokes as we paddle around the lake. We'll provide the canoes and safety equipment, you provide the enthusiasm!

NATURE CENTER AT NIGHT: NATURE ON THE HUNT

OCT. 9 • THURSDAY • 5–8 P.M.

Southeast Region, Cape Girardeau

Conservation Nature Center, 2289 County Park Drive, Cape Girardeau, MO 63701

No registration required, call 573-290-5218 for more information

All ages, families

Hunting seasons come and go for us, but nature is always on the hunt or being hunted. Some animals stalk their prey while others lie in wait. Come on in to where camouflage is always in vogue. Short presentations at 6 p.m. and 7 p.m. with come-and-go displays.

HOWLOWEEN SPECIAL EVENT

OCT. 17 • FRIDAY • 6–9 P.M.

Kansas City Region, Anita B. Gorman

Discovery Center, 4750 Troost Ave, Kansas City, MO 64110

Walk-in (all ages), call 816-759-7300 for more information

Our big event for fall will be on a Friday night for the first time ever! Take a hike on the Wild Side Walk to meet some of Missouri's favorite creepy crawlies. Kids will have a howling good time exploring nature stations like Track or Treat, The Bone Yard, and a live owl program by Lakeside Nature Center. It will be a howling fun, free, and unforgettable event.



**Eastern
screech owl**

DISCOVER NATURE PHOTO CONTEST

Show the world your idea of discovering nature in Missouri. Using your Google+, Instagram, or Twitter account, tag your Missouri nature photos with "#MDCdiscovernature." Your photos will appear on our website at mdc.mo.gov/node/26255, where you can also read the contest rules. Every month, Department staff will select and post a winning photo. We'll publish all of the monthly winners in the January 2015 issue of the *Conservationist*.

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IDEAS FOR FAMILY FUN

DISCOVER NATURE: BACKPACKING

OCT. 18–19 • 8 A.M. SATURDAY–5 P.M. SUNDAY

Ozark Region, Twin Pines Conservation

Education Center/Ozark Trail,

RT 1 Box 1998, Winona, MO 65588

Registration required, call 573-325-1381 for more information

Ages 12 and older. Children younger than 16 must have a parent or guardian present.

Complete an overnight backpacking trip on the Ozark Trail. All backpacking and camping gear will be provided. If you have ever wondered what it would take to get out and enjoy an overnight trip, this is a fun and affordable way to learn the ropes.

NATURE'S FOOD PLOTS

OCT. 22 • WEDNESDAY • 5–8 P.M.

Northeast Region, Moberly, MO,

location provided at later date.

Registration required, call Ted Seiler at 660-385-2616, ext. 118

Lead by Department Private Land Conservationist Ted Seiler, this workshop will cover traditional food plots, but will focus on managing natural foods for deer and other wildlife to maximize food potential on the farm and minimize time and money required.

NIGHT SOUNDS

OCT. 24 • FRIDAY • 7–9 P.M.

Southwest Region, Shepherd of the Hills Fish

Hatchery and Conservation Center,

483 Hatchery Road, Branson, MO 65616

Reservations required, call 417-334-4865, ext. 0 All ages, families

This annual Halloween-style guided hike will feature the natural sounds of night. Several stations will help you learn the sounds of a variety of animals and their meanings. After the hike, there will be activities and treats in the Conservation Center.



Subscribe online • mdc.mo.gov/node/9087 • Free to Missouri households



I Am Conservation

Theresa and David Lackey of Ashland float the Missouri River on a fall day in a cedar strip canoe they built themselves. "David wanted to build a wood strip canoe for years," said Theresa. "We decided to build this tandem cedar strip canoe for a Boundary Waters trip in 2007." The following year, they built David a solo strip canoe for an ultra-marathon race on the Missouri River, from Kansas City to St. Charles, 340 river miles. David has completed six endurance races with Theresa doing ground support. "We make a great team," said Theresa. The Lackeys began canoeing about 30 years ago. "We have always enjoyed outdoor adventure and paddling is such a great way to enjoy nature," said Theresa. The couple is also active in Missouri River Relief activities and has participated in river cleanup events. When not on the water, the couple works to return their property to native glade and savannah habitat. "All streams and waterways are of interest to us, but the Missouri River is truly one of the world's great rivers, and it flows through our state unencumbered by dams," said Theresa. "One can paddle for many miles and hours and still have plenty of river left to paddle. We're fortunate to live so close to this resource." —*photograph by David Stonner*